

“Conducting Drop-Weight Test to Determine Nil-Ductility Transition Temperature of Ferritic Steels”. For material thicknesses between ½-inch and ¾-inch, the ASTM E-208 specimen P-3, machined to ½-inch thickness, shall be used with a stop distance of 0.090-inch. In preparing weld specimens for dropweight testing, weld reinforcement shall be ground flush, the hard facing bead centered on and transverse to the weld, and the notch centered on and parallel to the weld axis.

(c) *Retest procedures.* (1) When Charpy V-notch impact specimens are used and the average value of the three initial specimens fails to meet the stated requirements by an amount not exceeding 15 percent, or the value for more than one specimen is below the required average value of when the value for one specimen is below the minimum value permitted for a single specimen by an amount not exceeding 15 percent, three additional specimens from the same material may be tested and the results combined with those previously obtained to form a new average. This new average of six specimens must exceed the specified minimum average. In the event the Charpy retests fail, the material may still be qualified by exhibiting a no-break performance when tested in accordance with the drop weight procedure, if applicable. Two drop weight specimens shall be tested for each Charpy V-notch set of three initial specimens which failed to qualify. Failure of either or both of these drop weight specimens will constitute rejection of the material or weldments represented, except as outlined in paragraph (c)(3) of this section.

(2) When drop weight specimens are used, retests shall be permitted only within the limits prescribed in ASTM Specification E-208, except as outlined in paragraph (c)(3) of this section.

(3) If, for heat treated base material, the required toughness results are not obtained in the initial test or in the retest, the material may be reheated one time and tested again in accordance with the initial requirements for the material.

(d) *Alternate toughness tests.* The Charpy V-notch impact values of §§ 54.05-20(a) and 54.05-25(a) are rep-

resentative of those which correlate with the nil-ductility transition temperature determined by the drop-weight tests for the steels specified in § 54.25-10. For materials for which there are other data showing suitable correlation between Charpy V-notch and drop-weight tests, V-notch acceptance limits different from those tabulated herein may be specially approved by the Commandant, based upon the actual correlation. In the case of steels for which the tabulated Charpy V-notch values can be shown to be inapplicable or in the case of specially considered steels, or as an alternative to complying with the tabulated impact requirements, acceptance may be based upon the material exhibiting a no-break performance when tested in accordance with the drop-weight procedure. Whenever the drop-weight test is used as an alternative to the Charpy V-notch test, two drop-weight specimens shall be tested for each set of three Charpy V-notch specimens otherwise required. If the drop-weight test cannot be performed because of material thickness limitations (less than one-half inch) or product shape, or is otherwise inapplicable (because of heat treatment, chemistry, etc.), other tests and/or test criteria will be specified by the Commandant to assure the adequacy of the material for the intended application.

[CGFR 68-82, 33 FR 18828, Dec. 18, 1968, as amended by CGD 73-254, 40 FR 40163, Sept. 2, 1975]

§ 54.05-6 Toughness test temperatures.

Each toughness test must be conducted at temperatures not warmer than -20 °F or 10 °F below the minimum service temperature, whichever is lower, except that for service at or below -320 °F, the tests may be conducted at the service temperature in accordance with § 54.25-10(a)(2).

[CGD 85-061, 54 FR 50964, Dec. 11, 1989]

§ 54.05-10 Certification of material toughness tests.

(a) *Plate material.* The manufacturer of plates may certify such material, provided it has been given an appropriate heat-treatment, by reporting the